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6 AN ANALYSIS OF RECRUIT TRAINING ATTRITION
IN THE U. S. MARINE CORPS

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15 N00014-76-C-0938

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ACKNOWLEDGEMENTS

The authors gratefully acknowledge the contribution and assistance of a large number of individuals to this ongoing research effort. Although those deserving mention are too numerous to list, we do single out the following for their outstanding assistance in this phase of the research: Lt. Colonel W. Osgood, Major R. Hockaday, Capt. W. Sevon, Mr. S. Gorman, HMC, MPI-20; Major R. Kempf, Parris Island MCRD: and the many enlisted personnel who participate in this study. We also acknowledge the valuable contribution of our Research Assistants, John Cathcart, Rodger Griffeth, Alan Curtis and Steve Hall.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER TR-5	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) An Analysis of Predictors of Recruit Training Attrition in the U. S. Marine Corps.		5. TYPE OF REPORT & PERIOD COVERED Technical Report
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) William H. Mobley, Herbert H. Hand, Robert L. Baker and Bruce M. Meglino		8. CONTRACT OR GRANT NUMBER(s) N000 14-76-C-0938
9. PERFORMING ORGANIZATION NAME AND ADDRESS Center for Management and Organizational Research College of Business Administration University of South Carolina, Columbia, S.C. 29208		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS NR 170-819
11. CONTROLLING OFFICE NAME AND ADDRESS Organizational Effectiveness Research Programs Office of Naval Research, (Code 452) Arlington, VA 22217		12. REPORT DATE February 1978
		13. NUMBER OF PAGES 50
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES This report was prepared under the Navy All Volunteer Force R & D Program of the Office of Naval Research under contract N000 14-76-C-0938.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
Expectations Attrition Attitudes Recruit Training	Job Content Leadership Group Climate Longitudinal	Behavioral Intentions Roles Values Education Race
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report summarizes the second phase of a longitudinal study of individual and organizational causes and correlates of attrition among first term enlisted personnel in the U.S. Marine Corps. Pre-recruit training values, reward expectations, expected leadership, job content, and group climate and demographic variables are analyzed in terms of their relation to recruit training attrition.		

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AN ANALYSIS OF PREDICTORS OF RECRUIT TRAINING ATTRITION IN THE U.S. MARINE CORPS

MANAGEMENT SUMMARY

Overview

Recruit training attrition among a sample of 1,521 first term, male, non-reservist enlisted Parris Island Marine Corps Recruits is analyzed. Recruit training graduates and attrites are compared on demographic variables, pre-recruit training intentions, expectations, and attraction to civilian and military roles. Changes in these variables over the course of recruit training are analyzed. Administrative and self-reported reasons for attrition are summarized and continuing research is described.

How Do Subsequent Recruit Training Graduates and Attrites Differ Before Recruit Training?

On demographic variables, graduates, when compared to attrites, had significantly higher education, significantly higher mental scores, and were significantly less likely to be married.

On intentions and expectations, graduates, when compared to attrites, had a significantly higher intention to complete and expectancy of completing, and a significantly lower expectancy of being able to get an acceptable civilian job. Thus, even before recruit training, subsequent graduates and attrites differ in their intentions and expectations.

With respect to role attraction and expected organizational variables, subsequent graduates and attrites differ before recruit training. Subsequent graduates see: the Marine Corps role as more attractive; expect a more structured leadership style; expect more skill variety, task

significance, and feedback; expect to be part of a proficient work group; expect to be more satisfied; and have higher internal motivation than do attrites.

What Changes Occur During Recruit Training?

When the pre-recruit training measures are compared to the end of recruit training measures, among those graduating, a number of significant differences are evident. There was a significant increase in intention to complete, intention to reenlist, expectancy of completing enlistment, and expectancy of being able to find an acceptable civilian job.

There also was a significant increase in attraction to the civilian role and leader consideration with a significant decrease in leader structure. Thus, by the end of recruit training, the graduates saw the Marine role as even more attractive than when they entered, and saw their leader as relatively more considerate and less structured than they expected when they entered.

Among the other notable differences were: a significant decrease in skill variety and task significance; significant increases in perceived unit proficiency, growth need, and overall satisfaction.

What Were the Reasons for Attrition?

Some 12% of the sample became attrites during recruit training. The administratively recorded reasons for attrition were: unsuitability-personality, 37%; unsuitability-apathy-attitude, 30%; physical, 13%; inaptitude, 10%; other, 10%.

Among the major self-reported reasons for attrition were: homesick, lack of personal freedom, too much pressure, physical reasons, and rules and regulations too rigid.

What Are the Implications of the Results?

The fact that graduates and attrites differ significantly even before recruit training with respect to a number of expectation variables appears to have direct implications for the recruitment, selection, and organizational entry process. To the extent potential recruits can be given accurate expectations during the recruiting process, the poorer risks (because of inaccurate or inappropriate expectations) may self-select out or appropriately adjust their expectations and/or values or preferences. This suggestion is worthy of experimental evaluation.

To the extent new recruits, at the very beginning of recruit training can be given a realistic job preview, they may become better risks by adjusting their expectations and/or values or preferences, by giving them time to develop appropriate coping mechanisms, by reducing ambiguity, by increasing their confidence, and/or by several other possible mechanisms. An experimental evaluation of this possibility is currently under way in the form of the Parris Island Recruit Assimilation Training Exercise (PIRATE).

What Additional Research Is Being Conducted?

In addition to the PIRATE experiment mentioned in the previous paragraph, a number of other activities are under way as a part of this research program. Measures have been collected on other samples of both Parris Island and San Diego and both male and female recruits. This will permit assessment of generalizability of results, comparisons of male and female recruits, and development of cross-validated classification models.

Measures also have been collected on the original sample late in their advanced post-recruit training and on their duty stations. Analysis of these data is under way and will be the subject of our next technical

report. These analyses will assess: changes in intentions, expectations, role attraction after recruit training; the prediction of attrition over the first 12-18 months of the enlistment; and the possible existence of a post-recruit training letdown.

AN ANALYSIS OF RECRUIT TRAINING ATTRITION IN THE U.S. MARINE CORPS

Introduction

This report summarizes the second phase of a longitudinal study of individual and organizational causes and correlates of attrition among first term enlisted personnel in the U.S. Marine Corps. The overall design of the study is reviewed and the measures are reviewed. Data describing the pre-recruit training values, expectations, and intentions of the sample of 1976 Parris Island Recruits were presented in an earlier report (Mobley, Hand, Logan, and Baker, 1977b) and will be briefly summarized in the present report. Preliminary analysis of recruit training attrition among this sample was presented earlier (Mobley, Hand, and Logan, 1977a). The present report provides an updated analysis of the correlates of recruit training attrition in the sample of August, 1976 Parris Island accessions. Finally, analyses to be reported in subsequent technical reports and additional phases of the research program are outlined.

The conceptual models, measures, and results of this longitudinal study are of potential interest to both the manpower and basic research communities. However, it is difficult to address the needs and interests of both communities in the same report while maintaining a reasonable length. Since the present research is being supported by developmental rather than basic research funds, this report is written with the interests of the manpower community as the primary concern. Several of the

subsequent technical reports will deal with conceptual, theoretical and methodological issues of primary interest to the basic research community.

Problem

Attrition among first term enlisted military personnel is a problem of justifiable concern. Declining numbers of citizens in the primary recruiting age groups, a slowly improving economy providing alternative employment opportunities, and increasingly technologically sophisticated manpower requirements serve to underscore the nature of the problem (see e.g. Mathews, 1977). Pre-end of active obligated service (EAOS) attrition places additional burden on the recruiting function which is already dealing with a tightening labor market. Pre-EAOS attrition represents a significant cost to the military (see e.g. Huck and Midlam, 1977) and a potentially significant cost to individuals who attrite. (This does not imply that all attrition is bad. Attrition of certain individuals at certain times may be desirable from cost-effectiveness, unit-effectiveness, and individual perspectives.)

Research on military attrition has been reviewed elsewhere (Hand, Griffeth, and Mobley, 1977). That review indicated that the military research on attrition: has placed relatively more emphasis on re-enlistment than pre-EAOS attrition; has placed relatively more emphasis on individual variables (e.g. education, mental grade, etc.) than on organizational variables; has infrequently analyzed the possible joint or interactive contribution to attrition of individual and organizational variables; has infrequently utilized longitudinal designs; and has infrequently used experimental designs. Also, it should be noted that the shift to the all volunteer concept raises issues of generalizability of pre-1973 research. (For a more general review of the turnover literature from

predominantly non-military settings, see Mobley, Griffeth, Hand, and Meglino, 1977c).

The present research program seeks to assess the contribution to pre-EAOS attrition of both individual and organizational variables using multivariate analyses, a longitudinal design, and subjects who enlisted after the shift to the all volunteer military.

General Model

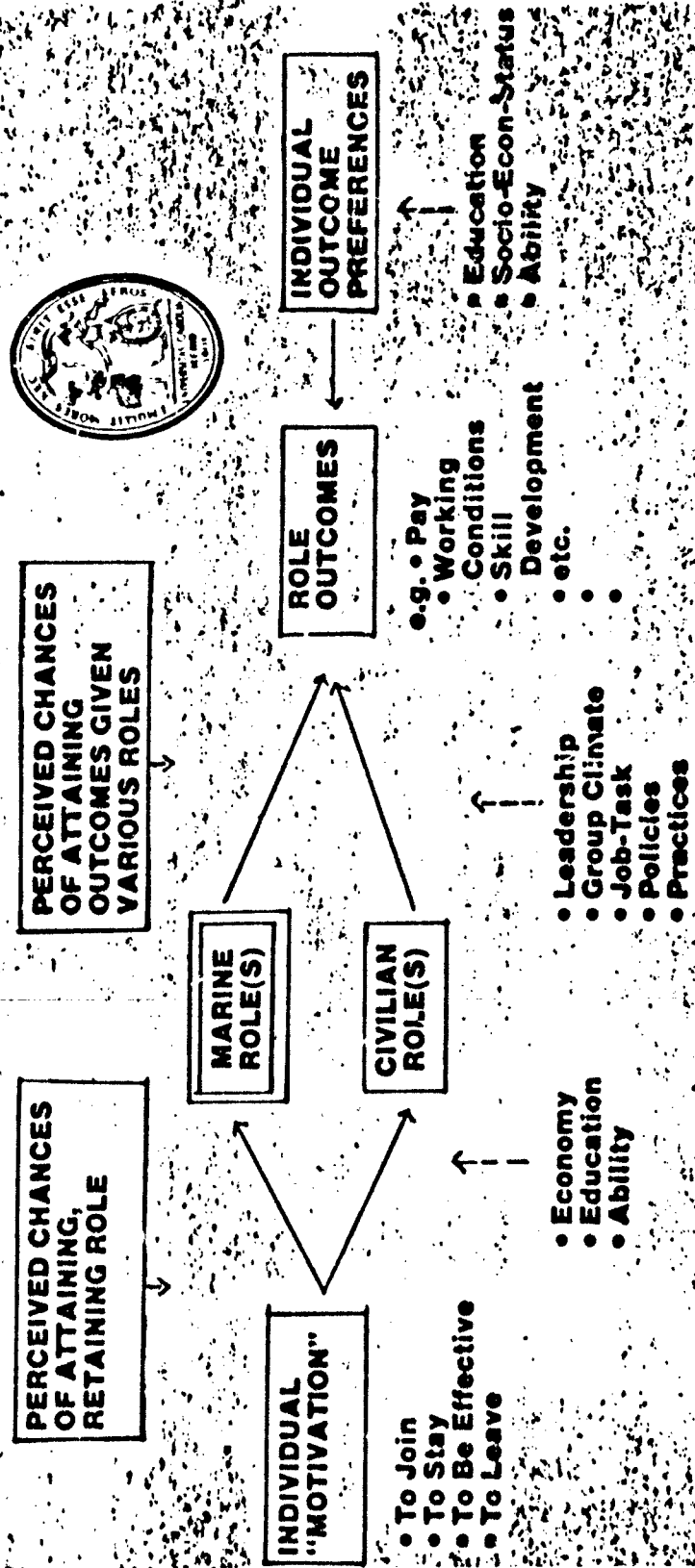
The general model serving as a basis for this study is a role choice model (see Figure 1). This model is a variant of the generalized expectancy model of organizational behavior (Vroom, 1964; Campbell, Dunnette, Lawler, and Weick, 1970; Dachler and Mobley, 1973; Lawler, 1973). For reviews of the expectancy model, see Locke (1975) and Mitchell (1974). See Wiskoff (1977) for a multinational review of military career expectation research.

The role choice model being used here addresses the following kinds of questions. Why do individuals choose a military role, in the present case an enlisted Marine Corps role, as opposed to a civilian role? Why do individuals choose to engage in effective role behavior, in the present case behavior which will not lead to pre-EAOS discharge? Why do individuals choose to reenlist or not reenlist?

The model suggests that role choice can, in part, be understood and predicted by knowledge of:

- a) The value individuals place on various role outcomes or consequences, e.g. pay, learning new skills, travel, etc.;
- b) The individual's perceived expectancy that a given role will or will not lead to various outcomes or consequences; i.e., role-outcome expectancy;

FIGURE 1



A GENERALIZED MODEL OF MARINE ROLE ATTRACTION

- c) The individual's expectancy regarding being able to attain the role, i.e. role expectancy, e.g. perceived chances of finding an acceptable civilian role or perceived chances of being a "successful" Marine.

As will be described in the measures section of this report these variables can be combined in various ways to generate, for each individual, role attraction indices for both civilian and Marine roles. The individual variables and the various composite role attraction indices are then evaluated in terms of their relation to attrition.

Since the model is a choice model, it is important to assess the individual's perceptions of both the Marine role and alternative (civilian) roles. See Schneider (1976) and Mobley, et al. (1977c) for a discussion of this important point. An individual's withdrawal from the Marine Corps may be related to more than simply his perception and evaluation of the Marine Corps. It also may be related to his perception and evaluation of the desirability and availability of alternatives.

Individual level variables such as education, age, mental grade, etc., have been shown to be related to pre-EAOS attrition (Hand et al., 1977; Mathews, 1977; Lockman, 1975; Sands, 1976). In the present research program, such individual level variables as age, education, mental grade, and marital status will be analyzed in terms of their relation to: values, expectancies, and role attraction; changes in values, expectancies, and role attraction; perceived organizational variables; and to attrition either directly or in combination with other individual and organizational variables.

Based in part on the Porter and Steers (1973) review of variables related to withdrawal (attrition) behavior, and the subsequent Mobley et al. (1977c) and Hand et al. (1977) reviews of the attrition

literature, the present study included measures of leadership, job content, and group climate. These organization variables, as perceived by the individual, are assessed in terms of their direct relationship to attrition and as they are related to the various components of the role choice model.

It is assumed that outcome values, role-outcome expectancies, and role expectancies are learned and are modified by experience. One advantage of the longitudinal design is that it affords the opportunity to track the assimilation-socialization process (Graen, 1976) as it influences these and other variables and as this process relates to attrition.

Summarizing the basic role model:

- a) It is a choice model which considers perceptions and evaluations of both Marine roles and alternative civilian roles;
- b) It considers both individual and organizational variables;
- c) Combined with a longitudinal design, it permits assessment of the learning-socialization process.

It is believed that use of this conceptual model will contribute not only to prediction of attrition from individual and organizational variables, but also to the understanding of the attrition process.

Summary of Previous Report

A previous report (Mobley et al., 1977b) dealt with pre-recruit training values, expectations and intentions of a sample of 1976 Parris Island accessions. The results presented in that report led to several generalizations. New recruits (on the way into recruit training) on the average, placed the highest value on learning new skills, extrinsic

rewards such as pay and benefits, and working for an organization that keeps its promises and rewards good performance. Somewhat surprising was the more neutral average desirability associated with extensive travel, danger, and a job that is important to the country. Least desirable were long separations from home and family, disruption of marriage and family plans and a job with little responsibility.

Potential implications of outcome desirability values include the following. The Marine Corps advertising and recruiting efforts should emphasize those outcomes which are both desirable from the potential recruits' perspective and potentially attainable in the Marine Corps. To the extent feasible, reward contingencies should be designed to enhance the attainability of desired outcomes and minimize undesired outcomes.

It was evident that the new recruits had high Marine role-outcome expectancies for many of the desired outcomes. It remains to be seen if these expectancies are realized in the Marine role. As Porter and Steers (1973) and others have noted, unmet expectations may be a primary contributor to withdrawal behavior. This will be evaluated over the course of this longitudinal research.

With respect to role expectancies, it was interesting to observe that 17% of the new recruits saw a 50-50 or less chance of completing their enlistment. Previous research has demonstrated this type of expectancy is a useful predictor of behavior. If this variable subsequently turns out to be a significant predictor of attrition, strategies for enhancing this expectancy should be evaluated. While only 42% of the new recruits saw a greater than 50-50 chance of finding an acceptable civilian job, it will be interesting to see if this increases as the economy improves, and/or with experience in the Marine Corps, and whether this expectancy is predictive of actual attrition.

The role attraction indices revealed that the Marine role was significantly more attractive than the civilian role for the new recruits. This comes as no surprise. However, to the extent this attraction is based on unrealistically high expectations, it could have negative consequences later. This will be a primary focus of the continuing longitudinal study.

Previous research (Kraut, 1975; LaRocco et al., 1975; Locke, 1975; Mobley et al., in press) has suggested that behavioral intentions are among the better predictors of subsequent behavior. In the present study, 20% of the new recruits indicated they were, at best, uncertain about intending to complete their enlistment and only 28% indicated they intended to reenlist. These intentions may be early warning signs for withdrawal behavior. This hypothesis will be tested over the course of this study. The concurrent correlates of pre-recruit training intentions were analyzed.

The single strongest correlate of intention to complete was role expectancy, i.e. perceived chances of completing. Expected overall satisfaction, expectancy of finding a civilian job, and sum of the Marine role-outcome expectancies added to the prediction of this intention. Those who do not intend to complete, even before recruit training, are less confident they can complete, expect to be less satisfied, have lower outcome expectancies, and see a higher chance of finding a civilian job. If these variables hold up in the prediction of actual attrition, they clearly have recruiting, selection, and/or early counseling implications.

When the pre-recruit training measures were subdivided by race and education, a number of significant differences were observed. To the extent these differences are related to job attitudes and behavior, they are worthy of note by recruiters, leaders, and planners.

Present Study of Actual Recruit Training Attrition

While the descriptive information provided in the earlier report (Mobley et al., 1977b) was interesting and of potential diagnostic value, it is the relationship between these variables and actual attrition that must serve as the primary basis for action implications. The prediction of actual recruit training attrition is the subject of the present report. Specifically, the present report assesses the extent to which recruit training attrition can be predicted from pre-recruit training values, expectations, intentions, and demographic data. Changes in values, expectations, and intentions over the course of recruit training are also analyzed.

METHOD

Basic Design

The basic longitudinal design is summarized in Figure 2. Survey measures were administered at the beginning of recruit training, again at the end of recruit training, or at the time of recruit training attrition. (Additional measures have been given near the end of advanced training and/or subsequent duty station and will be the subject of forthcoming technical reports.)

The portion of the longitudinal study reported here deals with the pre-recruit training measure administered at the beginning of recruit training, the end of recruit training measure, the recruit training attrition measure, and demographic data from the HMC RAMS (Recruit Accession Management System) file.

Sample

The original longitudinal (tracking) sample is composed of 1,954 male first term enlisted personnel who entered the Parris Island MCRD from August 7 to August 28, 1976. Table 1 summarizes the status of this sample. Of the 1,954 recruits who completed the survey, 1,872 (96%) gave ID numbers that could be matched with the RAMS demographic tape. Of the original 1,954, 203 (10.4%) were reservists. An additional 176 (7.6%) gave inconsistent survey responses as reflected in a series of consistency checks built into the survey. (See Technical Note 1.)

Recruit training attrition was 12% for the total sample, the reservists, and the non-reservists with consistent survey responses.

The present report focuses on the non-reservists with RAMS data who gave consistent survey responses, i.e. $N = 1,521$ with 12% recruit training attrition.

FIGURE 2

BASIC LONGITUDINAL DESIGN

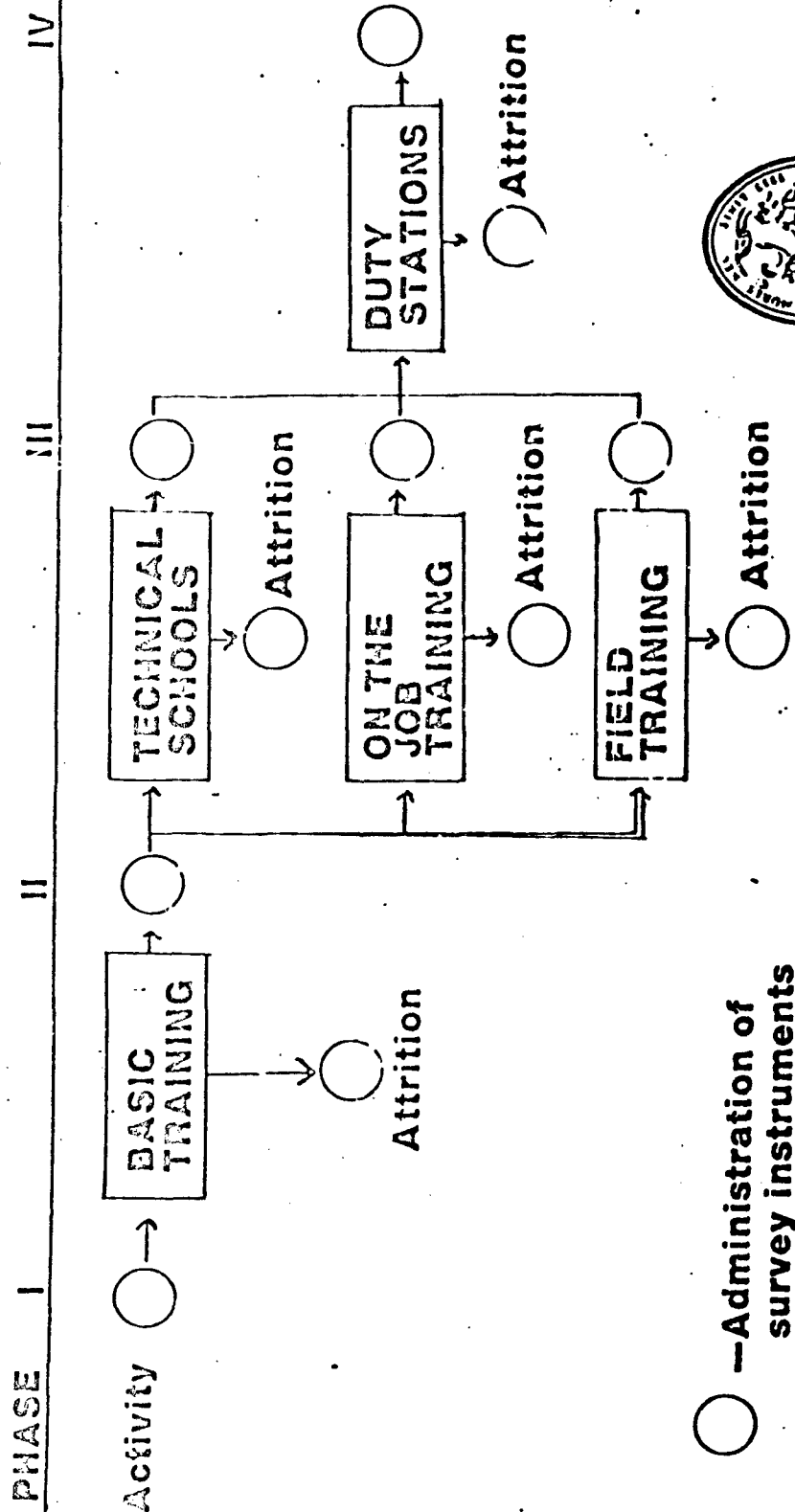


TABLE 1
SAMPLE STATUS

Status	N	N/Attrite	%Attrite	Comments
1. Original August 1976 Parris Island Accessions completing pre-recruit training survey.	1,954			
2. Matched survey ID numbers with RAMS demographic file ID	1,872	223	12%	Non-matches with RAMS (4.2% of sample, N=82)
3. Non-Reservists with Rams data	1,669	195	12%	Reservists in original sample (10.4% of sample, N=203)
4. Non-Reservists with RAMS data, with three or less consistency errors on survey (see technical note 1).	1,521	176	12%	Non-Reservists with RAMS data excluded from present analysis for inconsistent survey responses (7.6% of sample, N=148)

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Source: Parris Island 1976 Sample, RAMS file, Printout C-1.

The use of a single month's male accessions from only one Recruit Depot raises potential limits on the generalizability of results. Additional research is currently under way which samples: both the Parris Island and San Diego Recruit Depots; differing months of accession; and includes both male and female recruits.

Measures

The measures being used in this study are summarized in Figure 3. The individual level variables of age, mental grade, education, race, marital status, and number of dependents were collected from the RAMS demographic file.

The component measures of the role choice model were collected via survey. These components include the following:

- a) Enlisted personnel were presented a list of 50 role outcomes and asked to rate them on a +2 to -2 scale of desirability-undesirability. The role outcomes, generated from previous research, interviews, and pilot tests, include such things as "learning career skills," "separation from family," "responsibility," etc. The term "outcome" refers to rewards, costs, and conditions possibly associated with a job or role.
- b) Role-outcome expectancies: Marine: for each of the 50 role outcomes, enlisted personnel were asked to rate, on a scale of 0 to 1.0, their chances of attaining that outcome by being a Marine.
- c) Role-outcome expectancies: Civilian: for each of the 50 role outcomes, enlisted personnel were asked to rate, on a scale of 0 to 1.0, their chances of attaining that outcome by being in a civilian job.
- d) Role-expectancy: Marine: enlisted personnel were asked to rate their chances of successfully completing their first term enlistment, on a scale of 0 to 1.0.
- e) Role-expectancy: Civilian: enlisted personnel were asked to rate their chances of finding an acceptable civilian job right now if that were their goal, on a scale of 0 to 1.0.

Based on these component ratings, several composite index variables were generated for each individual.

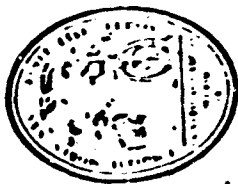


FIGURE 3

MEASURES

INDIVIDUAL

- AGE
- MENTAL GRADE
- EDUCATION
- RACE
- DEPENDENTS
- ROLE ATTRACTION—MARINE
- ROLE ATTRACTION—CIVILIAN

ORGANIZATIONAL

- LEADERSHIP (LBDQ)
 - CONSIDERATION
 - STRUCTURE
- GROUP (GDDQ)
 - HOMOGENEITY
 - PERMEABILITY
 - STABILITY
 - HEDONIC TONE
 - PLUS 9 OTHER DIMENSIONS
- JOB (JDS)
 - SKILL VARIETY
 - TASK SIGNIFICANCE
 - FEEDBACK
 - PLUS 7 OTHER DIMENSIONS

CRITERIA

- INTENTIONS
 - EAOS
 - RE-ENLISTMENT
- PRE-EAOS ATTRITION
 - ADMINISTRATIVE REASONS
 - SELF-REPORT REASONS
- PERFORMANCE
 - SELF-REPORT
 - MASTER FILE
 - Individual Recruit Training Performance

- f) Role attraction: Marine: is the sum of the cross-products of the 50 role outcome and Marine role-outcome expectancy ratings.
- g) Role attraction: Civilian: is the sum of the cross products of the 50 role outcome and civilian role-outcome expectancy ratings.
- h) Role Force: Marine: is the Marine role attraction index weighted by expectancy of successfully completing the first term enlistment.
- i) Role Force: Civilian: is the civilian role attraction index weighted by expectancy of finding an acceptable civilian job.

(A number of other summation, discrepancy, and/or multiplicative composite indices may be generated. The utility of alternative indices will be evaluated in subsequent methodological and conceptual reports.)

The organizational level variables, as perceived by enlisted personnel, were assessed with standardized survey measures. The Leader Behavior Description Questionnaire (Stogdill and Coons, 1957) assesses perceived leader "Consideration" and "Initiating Structure." The Group Dimension Description Questionnaire (Helphill, 1956) assesses 13 dimensions of groups including such things as homogeneity, stability, and hedonic tone. Two group sociometric measures, attraction and proficiency (Libo, 1953), also were included. The short version of Job Diagnostic Survey (Hackman and Oldham, 1974, 1975) assesses various dimensions of job content, e.g. skill variety, task significance, feedback, etc. This measure also includes job satisfaction scales and individual level measures of internal motivation and growth need. A complete list and definitions of the dimensions of the organizational measures are given in the Appendix of the earlier report (Mobley, et al., 1977b).

For the pre-recruit training administration of the survey measures, personnel were instructed to respond to the leadership, group, and job content measure: in terms of what they expected. Subsequent administrations called for a descriptive rather than expected response set.

Criteria data collected via survey included behavioral intentions to

complete first term enlistment, behavioral intentions to reenlist, performance goals, and in the case of attrites, self-report ratings of reasons for their attrition. Criteria data collected from the HMC master file included administrative reasons for attrition and re-cycle information.

Procedure

The measures were given two pilot tests: the first using enlisted personnel assigned to the University NROTC unit; the second using a platoon of July, 1976 Parris Island recruits. Based on the pilot tests, the instructions were clarified, ambiguous items were clarified or deleted, minimal variance items were deleted, and several new questions were added based on suggestions of pilot study subjects.

The pre-recruit training measures were administered as a part of administrative processing during the first few days after arrival at the recruit depot. The survey was administered by the University researchers to groups of four platoons at a time. Recruits were read the appropriate freedom of information passage (which was also included in the survey booklet); informed that participation was voluntary; and that individual responses were confidential. Survey responses were made on machine readable answer sheets. ID numbers were requested for the purpose of matching subsequent administrations of the survey and matching with the RAMS and master file. All officers, NCO's and DI's remained out of the room during administration of the survey.

The end of recruit training measure was administered the week of graduation and in the same manner as the pre-recruit training measure. Re-cycled recruits who did not graduate with their original platoon were given the end of recruit training measure on an individual basis the week of their graduation if they graduated within four weeks after their

original platoon. Attrites were given the survey measure while in the Casual Company in the few days before their separation. The same survey was used for pre-recruit training, post-recruit training, and attrites, with the exception that the attrite survey included additional questions on self-reported reasons for attrition.

RESULTS

Attrites represented 12% of the non-reservist sample. The primary analyses presented in this report are directed at assessing how the attrites differed from the recruit training graduates: 1) on the way into recruit training; and 2) at the time of either recruit training graduation or attrition.

Demographic variables are summarized in Table 2 for recruit training graduates and attrites. As can be seen, recruit training graduates and attrites differed significantly on education, marital status, and mental score. Graduates had significantly higher education and mental scores and were more likely to be single. There was not a statistically significant difference on race or age. It is well to note that even for the statistically significant differences, the absolute differences are relatively small.

Pre-recruit training means on intentions, expectations, and role attraction measures for the non-reservist sample, subdivided by subsequent attrites and graduates, are summarized in Table 3.

Intentions. As can be seen in Table 3, subsequent graduates, when compared to attrites, had a significantly higher intention to complete their enlistment even before they started recruit training. On the way into recruit training, subsequent recruit training graduates, when compared to subsequent attrites, also had a significantly higher intention to reenlist. It will be interesting to continue to track both intentions to complete and intentions to reenlist to see how they change as a function of time and experience, and how well such intentions predict actual post-recruit training attrition and reenlistment behavior. There is an increasing body of evidence indicating that intentions are among the

TABLE 2

DEMOGRAPHIC VARIABLE MEANS FOR RECRUIT TRAINING
GRADUATES AND ATTRITES

Variable	Graduates		Attrites		t
	Mean	SD	Mean	SD	
Education	11.74	.75	11.36	.98	6.05**
Race (% Caucasian)	.79	.41	.78	.41	.03
Marital Status (% Married)	.04	.19	.07	.26	-2.31*
Mental (AFQT)	62.09	19.21	58.59	18.38	2.29*
Age	18.83	1.47	19.03	1.88	-1.62
N	1345		176		

* $p < .05$

** $p < .01$

Source: RAMS File Printout C-2
1976 Parris Island Accessions, Non-Reservists

TABLE 3

PRE-RECRUIT TRAINING VARIABLE MEANS SUBDIVIDED
BY GRADUATES AND ATTRITES

Variable	Graduates		Attrites		t
	Mean	SD	Mean	SD	
<u>Intentions</u>					
Intention to complete	4.44	.92	3.86	1.31	7.39**
Intention to Re-enlist	3.07	1.01	2.75	1.24	3.87**
<u>Expectations</u>					
Chances of completing first term	.87	.21	.71	.30	8.74**
Chances of finding acceptable civilian job	.52	.33	.63	.32	-4.06**
Sum positive Marine Role outcome expectancies minus negative expectancies	29.94	7.81	25.69	10.76	6.22**
Sum positive Civilian Role outcome expectancies minus negative expectancies	22.74	9.11	22.47	11.02	0.34
<u>Role Attraction</u>					
Attraction: Marine Role	39.28	17.12	31.37	20.83	5.36**
Attraction: Civilian Role	29.60	16.26	27.87	19.67	1.22
Force: Marine Role	34.95	18.31	24.32	21.35	6.75**
Force: Civilian Role	16.23	15.29	17.74	17.86	-1.14
<u>Leadership</u>					
Expected leader consideration	43.94	10.64	42.25	11.47	1.87
Expected leader structure	64.63	7.06	62.90	7.57	2.90**
<u>Job Content</u>					
Expected skill variety	3.32	.83	3.14	.83	2.65**
Expected task identity	3.25	.80	3.14	.73	1.63
Expected task significance	3.77	.85	3.51	.80	3.64**
Expected autonomy	2.58	.91	2.45	.96	1.79
Expected feedback from job	3.44	.78	3.22	.81	3.47**
Expected feedback from others	3.10	.95	2.97	.88	1.75
Expected dealing with others	3.97	.72	3.85	.78	2.16*
<u>Group</u>					
Expected attraction	10.51	1.88	9.94	2.04	3.61**
Expected proficiency	6.82	1.49	6.55	1.59	2.21*
<u>Other</u>					
Expected overall satisfaction	3.45	.83	3.04	.88	5.99**
Internal motivation	3.94	.69	3.57	.78	4.61**
Growth need	3.86	.81	3.61	.84	3.58**
Max N	1345		176		

Source: Printout C-2 1976 Parris Island non-reservists accessions

* $p < .05$

** $p < .01$

best predictors of turnover behavior (see e.g. Kraut, 1975; Mobley, Horner and Hollingsworth, in press; LaRocco et al., 1975). The correlations between pre-recruit training intentions, other variables, and recruit training attrition will be explored in a subsequent section of this paper.

Expectations. As can be seen in Table 3, on the way into recruit training, subsequent graduates had a significantly higher expectancy of completing than did attrites. Graduates also had a significantly lower expectancy of finding an acceptable civilian job than did attrites. In an earlier report (Mobley et al., 1977b) it was found that these expectancies were among the best predictors of intentions to complete. In a subsequent section of the present report, correlations between these pre-recruit training expectancies, other variables, and recruit training attrition will be analyzed.

It is also evident in Table 3 that, on the way into recruit training, subsequent graduates when compared to attrites had significantly higher expectancies regarding the Marine role leading to positive rather than negative outcomes.

Role Attraction. The role attraction and role force indices were defined in an earlier section of this paper. As can be seen in Table 3, on the way into recruit training, subsequent graduates had a significantly higher Marine role attraction and force index than did attrites. Differences in attraction and force for the civilian role were not significantly different between subsequent graduates and attrites.

Expected Leadership. Subsequent graduates did not differ from attrites on the expected leader consideration measure taken at the beginning of recruit training. However, there was a significant difference in expected leader structure with subsequent graduates expecting more

leader structure than did attrites.

Job Content, Group, and Other Factors. As can be seen in Table 3, there were a number of significant differences between subsequent graduates and attrites on the pre-recruit training expected job content, group, and other measures. The strongest difference was in expected overall satisfaction. Subsequent graduates, on the way into recruit training, expected to be more satisfied than did subsequent attrites.

Multivariate Prediction of Recruit Training Attrition. The results reported in Tables 2 and 3 demonstrated a number of significant bivariate differences between recruit training graduates and attrites. However, since a number of these variables are interrelated, it is necessary to perform a multivariate analysis to assess which combination of variables best predicts the recruit training attrition. In the analysis that follows, stepwise multiple regression was used to assess the predictors of recruit training attrition (see Technical Note 3).

Table 4 summarizes the results of this analysis. Eight variables made a significant contribution to the prediction of recruit training attrition. Additional variables made only minimal contribution to the prediction equation. As can be seen in Table 4, expectancy of completing, measured at the beginning of recruit training, was the single best predictor of subsequent recruit training attrition. In order of contribution to the prediction equation, the following variables entered: education, sum of positive minus negative Marine role outcome expectancies; expectancy of finding a civilian job (negative weight); intention to complete; age (negative weight); force, Marine Corps role; expected overall satisfaction.

TABLE 4

STEPWISE MULTIPLE REGRESSION OF RECRUIT TRAINING ATTRITION ON PRE-RECRUIT
TRAINING SURVEY AND DEMOGRAPHIC VARIABLES

Variable	Simple r	R	R ²	F, equation
Expectancy of completing	.22	.22	.048	62.47
Education	.15	.26	.068	45.11
Sum positive minus negative Marine Role outcome expectancies	.16	.28	.080	35.88
Expectancy of finding acceptable civilian job (negative weight)	- .10	.29	.087	29.11
Intention to complete	.19	.30	.091	24.46
Age (negative weight)	- .04	.31	.094	21.28
Force, Marine Corps Role	.18	.31	.097	18.81
Expected Overall Satisfaction	.15	.32	.100	16.92

Total N = 1521

Adjusted R² = .094

Source: Printout C-3 1976 Parris Island non-reservist accessions.

Administrative Reasons for Attrition

Up to this point, the analysis has focused on pre-recruit training measures and their relation to total recruit training attrition. In this section, the focus is on the reasons for attrition as administratively recorded. The next section will focus on self-reported reasons for recruit attrition.

As noted in Table 1, 223 of the recruits taking the pre-recruit training survey became attrites during recruit training. In the tracking sample (non-reservists who completed the pre-recruit training survey with three or less consistency errors and matched with the RAMS file), 176 became recruit training attrites. Table 5 summarizes the administratively recorded (on the RAMS file) reasons for attrition in both samples.

As can be seen in Table 5, unsuitability-personality disorder and unsuitability-apathy, defective attitude account for over 60% of the administrative reasons for attrition. This finding underscores the importance of behavioral approaches to understanding and predicting attrition. Physical disability and inaptitude were the next major categories, accounting for 26% and 23% of the attrition in the samples.

Self-Reported Reasons for Attrition

The survey administered to attrites prior to their separation from the Recruit Depot included self-ratings of a number of possible reasons for their attrition. Table 6 summarizes the results. Reported beside each possible reason is: the average response, on a scale from 1 (strongly disagree) to 5 (strongly agree); the rank order of the mean rating.

In interpreting these results, it is well to keep in mind that the attrites' responses, taken as they were being out-processed, may be negatively distorted

TABLE 5

ADMINISTRATIVELY RECORDED REASONS FOR RECRUIT TRAINING ATTRITION

Reason	Total Recruit Sample ^a %	Tracking Sample ^b %
Unsuitability - Personality Disorders (with Admn. Bd.)	35%	37%
Unsuitability, Apathy, Defective Attitude, Inability to Expend Effort Constructively	27%	30%
Physical Disability	15%	13%
Unsuitability - Inaptitude	11%	10%
Erroneous Entry	6%	5%
Others: Lack of Jurisdiction, Misconduct, Conviction, Civil Authorities, etc.	6%	5%
N	223	176

25

Source: Printouts B-16, C-5 Parris Island 1976 Sample, RAMS file

- a. 223 Recruits who completed Phase I Survey and matched with RAMS file
 b. 176 non-Reservists who completed Phase I Survey with three or less consistency errors and matched with RAMS file.

TABLE 6

SELF-REPORT REASONS FOR RECRUIT TRAINING ATTRITION

Tracking Sample		I am leaving the Marine Corps because of:
Rank	Mean	
10	2.90	Physical health reasons.
13	2.75	Mental health reasons.
17	2.69	The poorly trained leaders I had.
22	2.57	The inability to make friends with other Marines.
14.5	2.73	Family problems back home.
2	3.40	The lack of personal freedom as a Marine.
24	2.54	Other enlistees picked on me.
25	2.52	I had trouble learning.
18	2.62	Inability to complete a training school.
12	2.76	A good job opportunity as a civilian.
16	2.72	Inability to get promoted.
7	3.01	Being a Marine is too physically demanding.
11	2.84	The assignments were too boring.
6	3.05	Superiors treated me unfairly.
3	3.24	There was too much pressure on me.
1	3.42	I missed my family/friends back home.
23	2.55	Getting in trouble was the only way I could get out of the Marines.
4	3.16	The rules and regulations were too rigid.
30	2.28	There wasn't enough discipline.
8	2.99	I want to get married.
21	2.59	I just couldn't stay out of trouble.
19.5	2.61	A change in my religious values.

Tracking Sample		I am leaving the Marine Corps because of:
Rank	Mean	
14.5	2.73	Minorities are discriminated against.
26	2.48	I didn't get the location I wanted.
19.5	2.61	I didn't get the training I wanted.
29	2.33	I got hung up on drugs.
27	2.44	I couldn't get along with members of other races.
9	2.96	There were too many "Mickey Mouse" rules and regulations.
5	3.11	I was treated like a little child.
28	2.42	I couldn't get in the unit I wanted.

Source: 1976 Parris Island recruit training attrites. Printout C-7.
Scale = 1, Strongly Disagree to 5, Strongly Agree.

Tracking Sample: Non-reservists matched with RAMS giving consistent responses to pre- and attrite surveys, Max N, 176.

even though anonymity was guaranteed and consistency checks were applied to their responses.

As can be seen in Table 6, the highest ranking self reported reasons for attrition were: "I missed family and friends back home; lack of personal freedom; too much pressure; and rules and regulations too rigid." To the extent these are valid self-appraisals, it would appear that homesickness and inability to adjust to the structure of recruit training were the major reasons for attrition.

Differences in Graduates Pre and Post Recruit training Measures

The focus of previous sections of this report has been on how pre-recruit training measures related to attrition and reasons for attrition. This sector focuses on how the pre-recruit training measures change over the course of recruit training. This was accomplished by comparing the responses of recruit training graduates on the pre-recruit training measure with their responses at the time of graduation. For attrites, their responses on the pre-recruit training measure were compared to their responses at the time of their out-processing from recruit training.

Table 7 summarizes the paired t-tests of the recruit training graduates' means on the way into recruit training compared to their means at the time of graduation.

Intentions. There was a significant increase in intentions to complete the enlistment and in intentions to reenlist. In percentage terms, 88% of the recruit training graduates, at the end of recruit training, intend to complete their enlistment, compared to 84% at the beginning of recruit training. At the beginning of recruit training, 29% of the sample

TABLE 7

COMPARISON OF PRE AND POST RECRUIT TRAINING MEASURES
FOR RECRUIT TRAINING GRADUATES

Variable	Pre-Recruit ^(a) Training		Post-Recruit Training		t
	Mean	SD	Mean	SD	
<u>Intentions</u>					
Intention to complete enlistment	4.46	.91	4.56	.83	3.10**
Intention to re-enlist	3.08	1.00	3.21	.93	4.42**
<u>Expectations</u>					
Chances of completing enlistment	.88	.20	.93	.17	7.39**
Chances of finding acceptable civilian job	.52	.33	.56	.33	4.38**
Sum positive minus negative Marine role outcome expect- ancies	29.96	7.50	31.93	7.76	8.09**
Sum positive minus negative civilian role outcome expectancies	22.65	8.77	23.95	9.41	4.49**
<u>Role Attraction</u>					
Attraction: Marine Role	39.31	16.78	44.41	18.12	9.74**
Attraction: Civilian Role	29.60	15.57	32.86	17.41	6.37**
Force: Marine Role	35.27	18.06	42.11	19.35	11.60**
Force: Civilian Role	16.31	14.98	20.04	17.25	7.53**
<u>Leadership</u>					
Leader consideration	43.84	10.77	50.72	9.09	18.66**
Leader structure	65.02	6.91	63.75	7.50	-5.09**
<u>Job Content</u>					
Skill variety	3.32	.82	3.22	.81	-3.49**
Task identity	3.26	.81	3.27	.76	.14

Variable	Pre-Recruit(a) Training		Post-Recruit Training		t
	Mean	SD	Mean	SD	
Task significance	3.79	.84	3.63	.84	-5.47**
Autonomy	2.58	.92	2.86	.78	9.10**
Feedback from job	3.46	.78	3.49	.71	1.31
Feedback from others	3.10	.95	3.39	.80	8.86**
Dealing with others	3.99	.72	3.84	.76	-6.10**
<u>Group</u>					
Attraction	10.56	1.80	10.69	2.02	1.80
Proficiency	6.83	1.38	7.18	1.44	6.42**
<u>Other</u>					
Overall satisfaction	3.47	.84	3.63	.73	6.10**
Internal motivation	3.97	.69	3.97	.71	.09
Growth need	3.91	.79	4.07	.76	6.09**

*p < .05

**p < .01

Source: Parris Island 1976 non-reservists Printout C-4.

(a) The values in this column may differ slightly from the values in the similar column in Table 3 because the present table is based on paired t-tests for the pre and post measures requiring three or fewer consistency errors on both measures.

indicated they intended to reenlist; by the end of recruit training this percentage had risen to 32%.

Expectancies and Role Attraction. There was a significant increase in expectancy of completing the first term enlistment over the course of recruit training among the eventual graduates. There was also a significant increase in graduates perceived chances of being able to find an acceptable civilian job now if they tried. However, this expectancy is still only .56 (on a scale of 0 to 1.0).

For both the Marine and Civilian Roles, there was a significant increase in Role Attraction and Role Force.

Leadership, Job Content, Group, and Other Variables. The results in this section compare what the graduates expected on the way into recruit training with their end of recruit training descriptions. There was a significant decrease in leadership structure among the graduates' pre and post recruit training measures. This is particularly interesting given the stereotype of the DI leadership role.

With respect to job content, there was a significant decrease in skill variety, task significance, and dealing with others; with significant increases in autonomy and feedback from others. The job content measure will become particularly salient in the next phase of the study when the tracking sample are on their MOS's.

Although there was no change in group attraction there was a significant increase in group proficiency. Finally, there was a significant increase in overall satisfaction and growth need between graduates' pre and post measures.

In comparing graduates' pre and post recruit measures, it must be recalled that the post measures were taken during graduation week. Thus,

the generally more positive post-recruit training means may be somewhat positively biased by the graduation week "euphoria."

Differences in Attrites Pre and Out-Placement Measures

Table 8 summarizes the means for attrites on their pre-recruit training measure and the measure taken during the out-placement. Just as the graduates end of recruit training means may be inflated by graduation week euphoria, the attrites out-placement measures may be depressed.

As can be seen in Table 8, there was a significant increase in the attrites expectation of being able to find an acceptable civilian job. There also was a significant decrease in the attrites: Marine Role Attraction, Role Attraction; Role Force; leader structure, skill variety, task significance, dealing with others, and internal motivation.

DISCUSSION

The results of this study revealed that among a 1976 sample of Parris Island first term enlisted, non-reservists, male Marine recruits, there were a number of statistically significant differences before recruit training which differentiate subsequent recruit training graduates from attrites. On demographic variables, graduates were better educated, had higher mental scores and were less likely to be married. The fact that such demographic variables and education, mental grade, and marital status predicted attrition comes as no surprise. Previous military attrition research, recently reviewed by Hand et al. (1977) revealed consistent, but generally weak, predictive value of such variables.

The present research went beyond demographic prediction to include a number of variables dealing with: expected outcomes (rewards, costs);

TABLE 8
COMPARISON OF PRE AND OUT PLACEMENT MEASURES FOR
RECRUIT TRAINING ATTRITES

Variable	Pre Recruit Training		Out-Placement Measure		t
	Mean	SD	Mean	SD	
<u>Expectations-Role Attraction</u>					
Expectations of finding acceptable civilian job	.61	.29	.70	.25	2.79**
Sum positive minus negative Marine Role outcome expectancies	25.43	9.67	23.54	11.33	-1.79
Sum positive minus negative civilian role outcome expectancies	22.39	9.93	23.30	10.45	.80
Attraction: Marine Role	28.61	18.24	22.16	18.09	-3.23**
Attraction: Civilian Role	26.11	17.52	23.88	17.91	-1.08
Force: Marine Role	21.92	18.32	9.09	15.03	-6.44**
Force: Civilian Role	16.92	15.79	18.12	15.09	.71
<u>Leadership</u>					
Leader Consideration	41.14	12.26	42.93	11.37	1.64
Leader Structure	62.69	7.34	57.70	9.89	-5.41**
<u>Job Content</u>					
Skill variety	3.07	.79	2.87	.70	-2.11*
Task identity	3.12	.77	2.97	.74	-1.51
Task significance	3.46	.82	3.12	.73	-3.43**
Autonomy	2.41	.94	2.78	.77	3.86**
Feedback from job	3.11	.86	3.09	.63	-.20
Feedback from others	2.98	.86	2.99	.80	.09
Dealing with others	3.84	.72	3.38	.62	-5.60**
<u>Group</u>					
Attraction	9.80	1.97	9.52	2.37	1.03
Proficiency	6.48	1.45	6.37	1.61	-.57
<u>Other</u>					
Overall satisfaction	2.87	.86	2.88	.75	.14
Internal motivation	3.63	.70	3.28	.64	-3.98**
Growth need	3.59	.84	3.42	.81	-1.61

Source: Parris Island 1976 Attrites Printout C-6.

**p < .01

*p < .05

expected leadership, job content, and group measures; a role attraction index; and expectancy and intention of completing variables. It was found that on the way into recruit training, subsequent graduates and attrites differ significantly on many of these measures. Specifically, on the way into recruit training, subsequent attrites have a lower expectancy of completing and a lower intention to complete. Attrites, when compared to subsequent graduates, also have a lower attraction index to the Marine Role, expect less leader structure, expect to be less satisfied, and have lower internal motivation.

The present research also goes beyond much of the previous research by including measures of the attraction of civilian roles and perceived chances of currently getting a civilian job if one tried. It was found that attrites, when compared to graduates, see a significantly higher chance of being able to secure a civilian job.

When the pre-recruit training variables were placed, stepwise, in one equation to predict recruit training attrition, it was found that 10% of variance in attrition was predicted by expectancy of completing, education, positive minus negative Marine Role outcome expectancies, expectancy of finding an acceptable civilian job (negative weight) intention to complete, age (negative weight), force index for the Marine Role, and expected overall satisfaction.

Several things are worthy of note in this analysis. The variables entering the equation were of several different types, i.e. demographic, expectation, and role attraction (force). This illustrates the potential utility of moving beyond simple demographic prediction of attrition. Also, it is well to note that expectancy of finding an acceptable civilian job entered the equation. This illustrates the empirical importance of the

conceptual point made by March and Simon (1956), Mobley (1977), Mobley et al. (1977c), Schneider (1976), that perceptions of alternatives should be considered in attrition research.

A number of explanations are possible for the lack of a stronger R^2 . The fact that only 12% of the sample became recruit training attrites is a rather severe split which imposes a restriction of range problem for the purpose of demonstrating relationships. Due to recruiting practices and self-selection, relative homogeneity of independent variables also may impose restriction of range problems. The reliability of the measures (see Mobley et al., 1977b) imposes a further constraint on demonstrating relationships. Combining all attrites into one category may result in a contaminated criterion. From the Marine Corps perspective, an attrite represents a loss in initial investment. However, differing precursors may be relevant to differing types of attrites. Attrite N's are too small for subdivision in the present study, but such subdivision should be possible when the present data are combined with new samples currently being collected. The fact that the criterion data were collected over only the recruit training period (eleven weeks) may further depress relationships. This will be evaluated as the sample is tracked over an extended period of time. Finally, as noted by Hand et al. (1977), DOD and Marine Corps policy decisions periodically prescribe differing levels of acceptable attrition. Such administratively controlled attrition may serve to confound individual level analyses of attrition.

Although the R^2 in this study is .10, this is not trivial. This conclusion is based on the generally weaker R^2 in previous individual level military attrition research (see Hand et al., 1977) which focused only on demographic variables and/or recruit training. Further, the cost

of attrition (see e.g. Huck and Midlam, 1977; Hand et al. 1977) suggests that understanding and predicting even this amount of criterion variance is of significance.

The present results, combined with previous research and relevant conceptual considerations, are sufficient to provide the basis for formulating at least one counter attrition strategy worthy of experimental evaluation. It has been shown that recruit training attrition is related to pre-recruit training expectations of completing, expectancies regarding Marine Corps role outcomes, expected leader structure, and a variety of expected job content and group measures. This leads to the hypothesis that a pre-recruit training assimilation training experience designed to enhance expectancies of completing, provide realistic expectations regarding e.g. leader structure and role outcomes, and to clarify outcome values or preferences, may lead to a reduction in attrition. This hypothesis is currently being tested with the recently developed Parris Island Recruit Assimilation Training Exercise (PIRATE).

Several studies, in both the private sector and military settings, have shown that realistic job previews can lead to lower attrition. However, these studies suffer from a number of design problems and the psychology of the effect is not well understood (Ilgen and Dugoni, 1977). The PIRATE experiment will both test the efficacy of the realistic job preview concept in a military recruit training setting and contribute to the understanding of the psychology of any observed effects. Similar type experiments would be valuable at the recruiting step where self-selection could be assessed.

Continuing Research

The current longitudinal research project is being extended in a

number of ways. New data have been collected on both male and female recruits at Parris Island and on male recruits at San Diego. Analysis of this data will permit: evaluating the generalizability of the results reported above; cross-validation of classification models generated from the present results; and comparisons between male and female recruits.

The original Parris Island sample has been administered surveys near the end of their advanced post-recruit training (for those recruits who stayed on the east coast). A technical report is currently being prepared dealing with attrition through the end of advanced training and with changes in expectations, intentions, role attraction, etc., between recruit training and advanced training. This report, the next in our series, will evaluate the existence of a post-recruit training trauma or let down as it may relate to attrition.

Survey measures were recently administered to the members of the original sample on their duty stations. These data are currently being analyzed. Finally, the PIRATE experiment, mentioned in the previous section is now underway. Results will be reported in late summer, 1978.

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TECHNICAL NOTES

1. In any survey, the consistency or quality of responses is of concern. The present survey included 15 consistency checks, i.e. similar questions calling for similar answers, as a quality control procedure. In the present analyses of survey responses, only subjects with three or fewer consistency violations are included. This resulted in a 7.6% reduction in the sample. A separate report will deal with impact on results of including successively poorer quality responses.
2. For bivariate relationships, missing data were handled on a pair-wise deletion basis. Thus, any given relationship may be based in less than the total N of 1521. This procedure generally resulted in a sample size reduction of less than two percent for any given bivariate relationship.
3. The choice among alternative statistical models for categorical dependent variables, such as attrition, involves tradoffs among feasibility, simplicity, and theoretical assumptions underlying the statistical model. Gunderson (1974), in an illuminating discussion and empirical comparison of alternative statistical models with dichotomous dependent variables, concluded that ordinary least square provided an adequate model. The present study used multiple regression with the dichotomous attrition dependent variable (see e.g. Wherry, 1947). A methodological study is planned which will assess the adequacy of alternative prediction and classification statistical models.
4. All analyses in this report were run using the Statistical Packages for the Social Sciences, SPSSVI.

OTHER REPORTS IN THIS SERIES

ONR: N00014-76-C-0938

1. Mobley, W., Hand, H., and Logan, J. A Longitudinal Study of Enlisted Personnel Attrition in the U. S. Marine Corps: Preliminary Recruit Training Results. In Sinaiko, H. W. (Ed.) First Term Enlisted Attrition. Washington, D. C., Smithsonian Institution, 1977.
2. Mobley, W., Hand, H., Logan, J., and Baker, R. Pre-Recruit Training Values, Expectations, and Intentions of Marine Corps Recruits. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-2, ADA041194, May, 1977.
3. Hand, H., Griffeth, R., and Mobley, W. Military Enlistment, Reenlistments and Withdrawal Research: A Critical Review of the Literature. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-3, ADA048955, November, 1977.
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- *5. Mobley, W., Hand, H., Baker, R., and Meglino, B. An Analysis of Recruit Training Attrition in the U.S. Marine Corps. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-5, February, 1978.

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